SERVICE MANUAL

FREE COMBI SERIE

FC-H07AIN, FC-H09AIN, FC-H12AIN

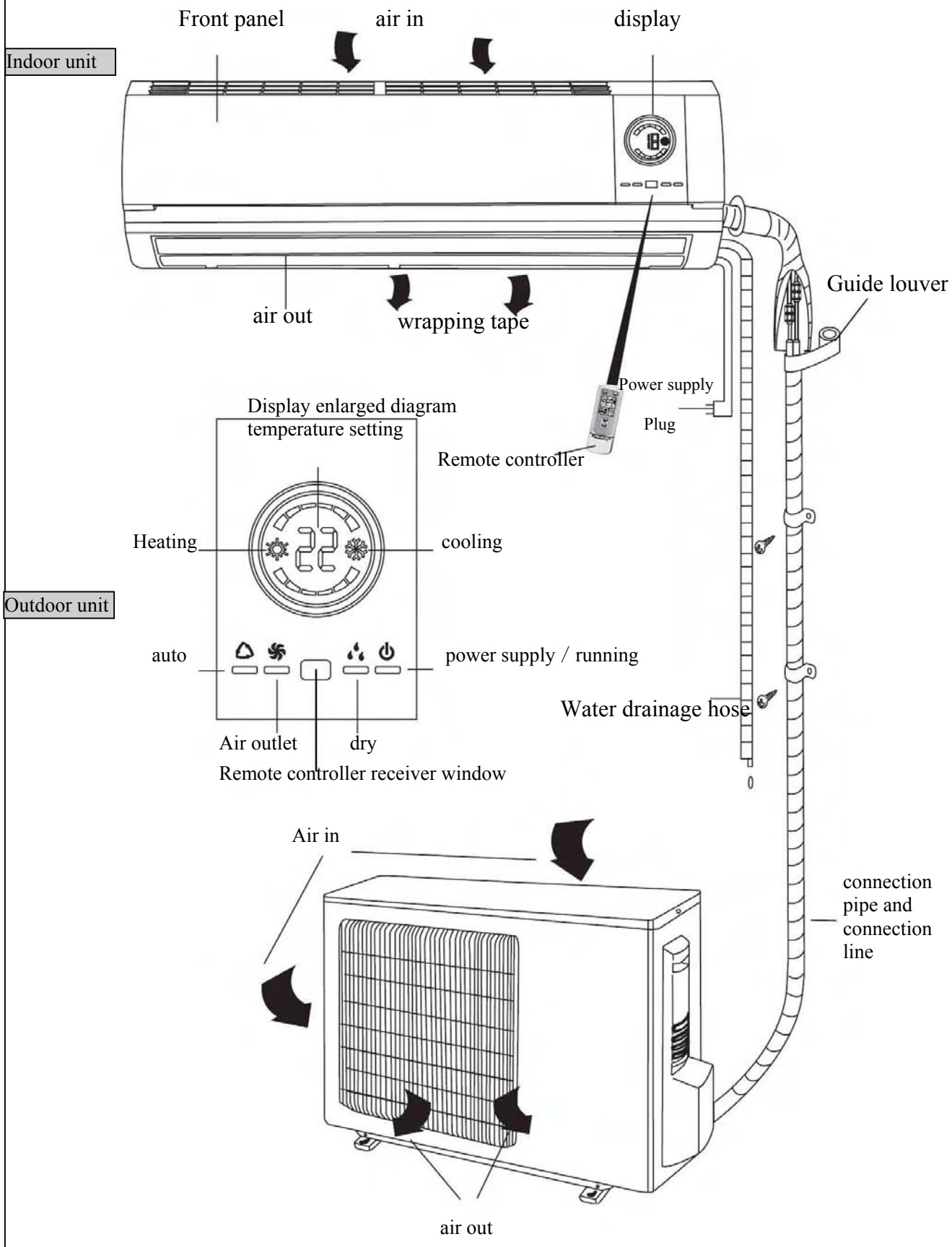
sinclair
AIR CONDITIONING

2 Specifications and Technical Parameters

Model	FC-H07AIN	FC-H09AIN	FC-H12AIN
Fan Motor Speed (r/min) (SH/H/M/L)	1150/1050/900/750	1150/1050/900/750	1250/1050/950/800
Output of Fan Motor (w)	20	20	20
Input Power of Heater (w)	/	/	/
Fan Motor Capacitor (uF)	1	1	1
Fan Motor RLA(A)	0.26	0.26	0.26
Fan Type-Piece	Cross flow fan – 1	Cross flow fan – 1	Cross flow fan – 1
Diameter-Length (mm)	Ø97×583	Ø97×583	Ø92×616
Evaporator	Aluminum fin-copper tube	Aluminum fin-copper tube	Aluminum fin-copper tube
Pipe Diameter (mm)	Ø7	Ø7	Ø7
Row-Fin Gap(mm)	2-1.4	2-1.4	2.5.-1.4
Coil length (l) x height (H) x coil width (L)	580X228.6X25.4	580X228.6X25.4	681X324.3X38.1
Swing Motor Model	MP28VB	MP28VB	MP28EC
Output of Swing Motor (W)	2	2	2
Fuse (A)	PCB 3.15A Transformer 0.2A	PCB 3.15A Transformer 0.2A	PCB 3.15A Transformer 0.2A
Sound Pressure Level dB (A) (H/M/L)	37/34/31/28	38/34/31/28	40/34/32/30
Sound Power Level dB (A) (H/M/L)***	47/44/41/38	48/44/41/38	50/44/42/40
Dimension (W/H/D) (mm)	770X250X190	770X250X190	830X285X200
Dimension of Package (L/W/H)(mm)	855X330X272	855X330X272	906X385X265
Net Weight /Gross Weight (kg)	8.5/12.5	8.5/12.5	11/14

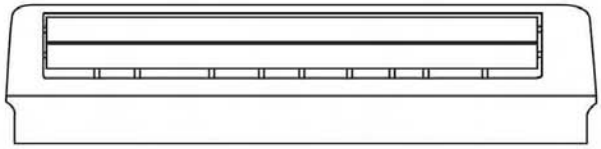
The above data is subject to change without prior notice.

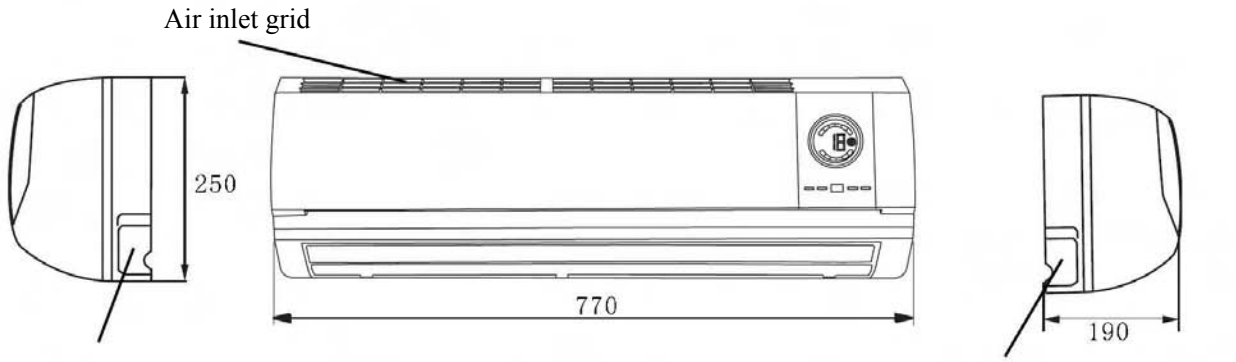
3 Parts name


Front panel
air in
display
Indoor unit
air out
wrapping tape
Guide louver
Power supply
Plug
Remote controller
Display enlarged diagram
temperature setting
Heating
cooling
Outdoor unit
auto
power supply / running
Water drainage hose
Air outlet
dry
Remote controller receiver window
Air in
connection pipe and connection line
air out

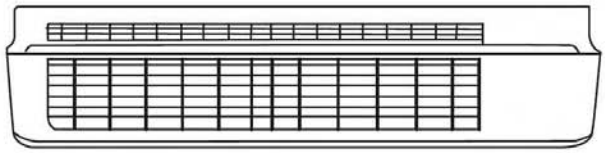
4 Outline and installation dimensions

Outline and installation dimensions of indoor unit

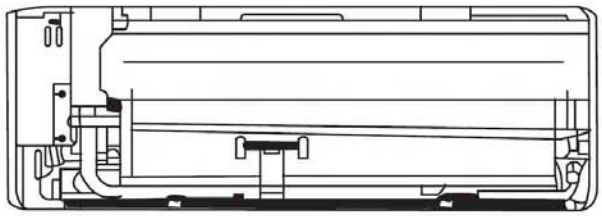


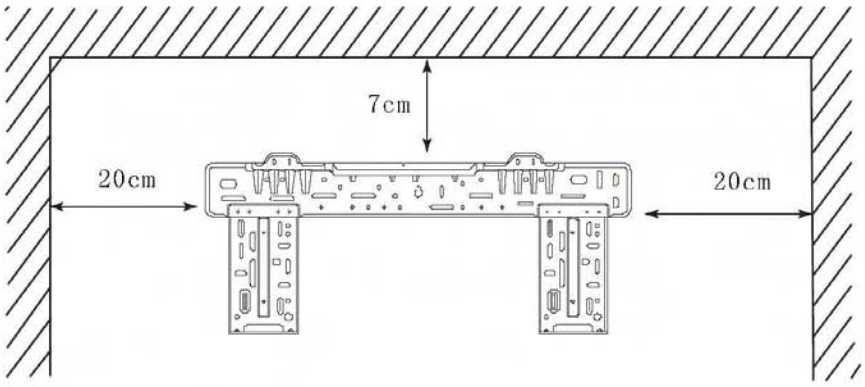


Mark for left outlet pipe hole Top view diagram Mark for right outlet pipe hole



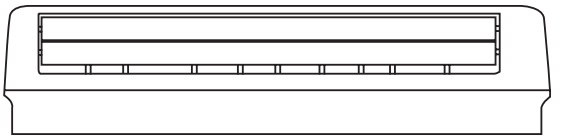
Back view

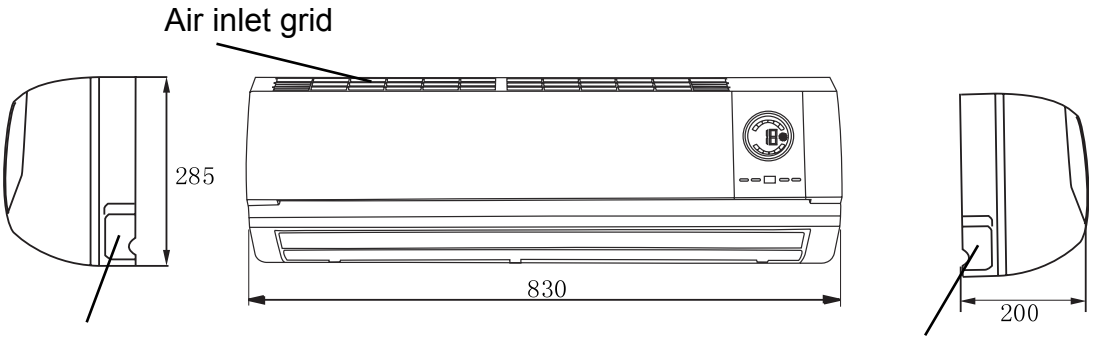




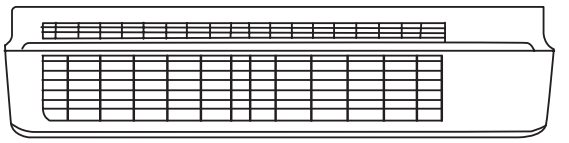
Ceiling

Outline and installation dimensions of indoor unit

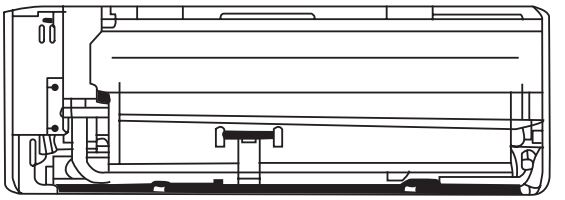


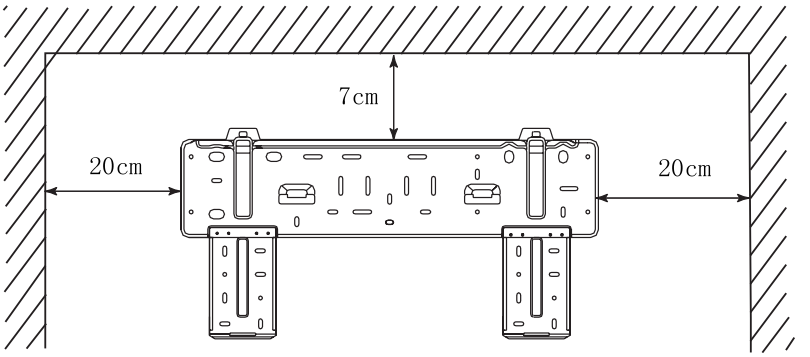


Mark for left outlet pipe hole Top view diagram Mark for right outlet pipe hole



Back view

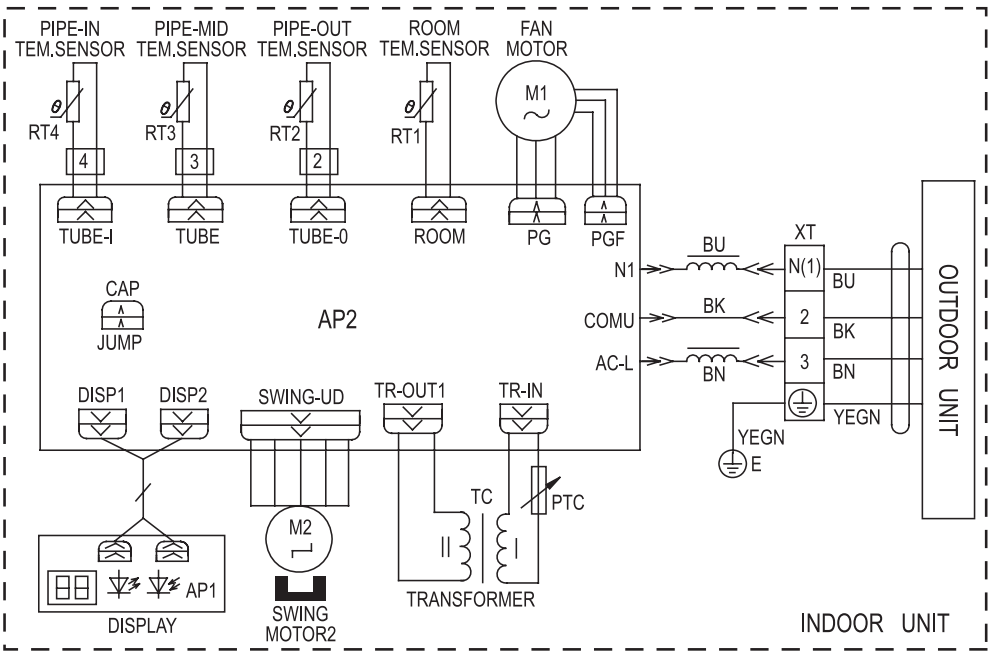




Ceiling

5 Circuit diagram

FC-H07AIN FC-H09AIN FC-H12AIN



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The above circuit diagram is subject to change without prior notice, please refer to nameplate for reference.

6 Controller Function Manual and Operating Instructions

Controller Function Manual

6.1.1 Temperature Parameters

- Indoor preset temperature (T_{preset})
- Indoor heating exchanger copper pipe exterior temperature(T_{pipe})
- Indoor tube temperature (T_{tube})

6.1.2 Basic Functions

6.1.2.1 Cooling Mode

（1） fan motor and swing runs on the preset mode,

（2）When outdoor unit has mulfunction or protection stopping,indoor unit continue to original running condition,and display mulfunction code.

（3）Indoor fan motor will be stoped when there has mode confliction

Under this mode, the temperature can be set within a range from 16 to 30℃.

6.1.2.2 Dehumidifying Mode

（1）Fan motor runs on the low fan speed,swing runs on the preset mode,

（2）When outdoor unit has mulfunction or protection stopping,indoor unit continue to original running condition,and display mulfunction code.

Under this mode, the temperature can be set within a range from 16 to 30℃.

6.1.2.3 Fan mode

Indoor fan motor just run under the fan mode.Unit is running cool mode with auto fan under the auto fan speed mode.

6.1.2.4 Heating Mode

(1) In HEAT mode, when the compressor is running indoor unit turns to prevent cold wind; when the compressor is stop ,indoor fan motor is on,then indoor unit turns to blow residual heat .

(2)Protect function, when the compressor is stopped by malfunction, the indoor fan will run to blow residual heat .

3).Prevent cold wind: the compressor starts to run, the indoor fan will run after 2min.

4).Blow residual heat

After the indoor fan blow 60s,the unit will turn off. During blowing residual heat,the fan speed is unchangeable.

When defrosting\backing-oil,indoor fan motor stop,unit don't blow residual heat,unit don't check all temp. sensor malfunction

Under this mode, the temperature can be set within a range from 16 to 30℃.

6.1.2.5Auto Mode

Under this mode, the system will automatically select its run mode (cooling, dehumidifying, heating or fan) with the change of ambient temperature. Protection function same as under COOL, DEHUMIDIFY, FAN and HEAT mode. during the unit is defrosting \backing oil till unit stop defrosting and backing oil fro 3 minutes

2．6 Modes confliction

If indoor received the information modes confliction position 1 of outdoor unit, indoor unit overload will stop (Indoor fan motor, swing), malfunction indication will be displayed, the mode sent to outdoor unit is still the mode that received by the remote control.

If timer on has arrived, if indoor received the information modes confliction position 1 of outdoor, indoor overload (indoor fan motor,swing) , the malfunction display, the mode sent to outdoor unit is still the mode that recived by the remote control.

6.1.3 Other control

6.1.3.1 Buzzer

The air conditioner will send out “Hua” alert when it is energized or receives a control command.

6.1.3.2 AUTO STOP key

Upon one press of this key, the unit will run under auto mode, the indoor fan will run under auto fan. The swing motor works when the indoor fan is working. Another press of this key will stop the unit.

6.1.3.3 Auto fan speed control

Indoor fan motor choose high\middle\low fan speed according to ambient temp. under the cool\heat\fan mode,anto fan speed is low speed under dehumidify mode.There has 3 minutes and a half between the switchs of different fan speed at least.

6.1.3.4. Sleep Function

Setting SLEEP function under COOL or DRY mode, the preset temperature will automatically rise by 1℃after 1

hour and rise by another 1℃after 2 hours. Preset temperature will rise by 2 ℃in total within 2 hours. After that, the unit will run at this preset temperature and at preset fan speed.

Setting SLEEP function under HEAT mode, the preset temperature will automatically decrease by 1℃ after 1hour and decrease by another 1℃ after 2 hours. Preset temperature will decrease by 2 ℃ in total within 2 hours. After that, the unit will run at this preset temperature and at preset fan speed.

Preset temperature for AUTO mode and FAN mode , the sleep function will remain unchanged.

3．5 Timer function

1.Ordinary Timer setting:

Timer on: Under unit off, the timer on function could be set up, if timer on has arrived, controller will run at setting mode, the timer interval is 0.5hr, setting range is 0.5-24hrs .

Timer off: Under unit off, the timer off function could be set up, if timer off has arrived, controller will run at setting mode, the timer interval is 0.5hr, setting range is 0.5-24hrs.

2.Timer setting for hour

Timer on: if system is running, to set timer on, the system will continue to run, if unit is off to set up timer on, when timer on has arrived, the system will run at pressetting mode.

Timer off: If system is off to set up the timer off, when to set up timer off, the unit will stand by, when unit is on, to set up timer off, when the timer off arrived, the system will stop to work.

Timer setting change:

When system is in Timer status, can set up timer on and timer off by wireless remote control, to reset up Timer also, the system will run at last setting status.

When system is running, at the same time to set up Timer on and Timer off, the system will keep the present setting status, when time arrived, system will stop to work.

When system stop, at the same time to set up Timer on and Timer off, the system will stop, untile the timer arrived, the system will start to work.

Hereafter, when timer of timer on in every day arrived, it will run the presetting modes, after timer off arrived, the system will stop.

3.6 Memory function

Memory contents: Mode, up and down swing, Light, Setting temp., Setting fan speed, Ordinary setting Fahrenheit/Centigrade, after powered off, and powered on, it will run at the memory contents.

If no timer setting function in last remote control order, the system will memorize the last remote control order, the system will memorize the last remote control order and work with last remote control setting.

In the last remote control order, there is ordinary timer function, if power off happen beffore the timer arrived, the system will memorize the last remote control timer function, and will recalculate.

If there is timer function in last remote control order, but timer has arrive, system will run at timer on or timer off and power off, after repowered on, the system will run at the mode before power off.

3．7 I Feel function

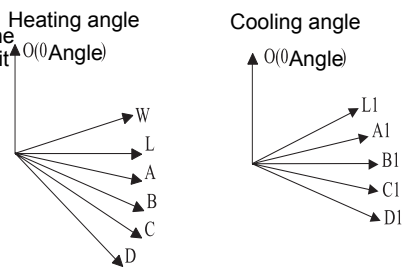
When controller received the orders that the controller will work according to ambient temperature which is sent by remote control (Except Defrost and anti-cool wind, it will still adopt the air conditioner self ambient sensor sampling value), the remote control in every 10mins, to sent the ambient temperature value to controller. 11mins later, the controller haven't received the ambient temperature value from the remote control that the air conditioner will run itself ambient temperature. If there is no setting function that the ambient temperature will adopt the AC sensor sampling value. Power off will not memorize this function.

3．8 Turbo function

The turbo function is available in Cool and Heat modes. When controller received this order, the indoor fan will run at super high, sent the outdoor unit Turbo signal and sent the high fan speed.

3．9 UP\Down swing fan function

After powered on, the up and down swing motor will firstly rotate the air guide baord to position O in anticlockwise, turn off the air vent. After unit is turned on, if there is no siwng function set up, under the Heat mode or Auto Heat mode, the up and down air guide board will rotate to position D in clockwise; In other modes, the up and down guide board will roate to horizontal position L1 clockwise. When turning on the unit to set up swing function synchronously. If unit is turned on to set up the swing function that the guide louver will swing between L and D. There are 7 kinds of status of swing for guide louver: Position L, Position A, Position B, Position C, Position D, Position L and Position D, Position L to Position D to stop swing (the inclination between L-D is conformal). When unit is off the air guide louver will close and turn to position 0. The swing is only valid while setting swing order and indoor fan motor is running.



3．10 Cold plasma function

When turn on fan motor can turn on cold plasma function; when remote control to turn off the cold plasma function or turn off fan motor, this function is turned off. (Only the unit of Panel 1 has this function)

4 Displayer

4．1 Basic display

（1 ）After powered on, the figure will be displayed, then only Power/running indicator turn on.

（2 ）When using remote conroller to open the unit, it will turn on, at the same time to display current setting running modes.

Cool mode:run and cool lights are green; Heat mode: run and heat lights are green;Dry mode:run and dry lights are green

Fan mode:run and fan lights are green; Auto mode: run\auto and actual run lights are green; is green

Note: Panel 2 models don't have fan light and auto mode light.Under the fan mode run light is green.Under the auto mode run lightand actual run mode light are green.

If you turn off light key, then all display will be turned off(it's available under the unit is off)

(4) After set up the SLEEP function, the displayer will keep original displaying status that is Sleep function will not affect the light on and Off.

4．2 Dual 8 display

The nixie tube will display current setting temperature that the setting temperature range is 16-30 ℃. In Auto mode, the Cool and Fan will display 25℃, in Heat will display 20℃, cooling only controller only display 25℃. Display indoor temperature, the temperature setting range is 0℃ to 60℃ .

4．3 Fan speed display

Fan speed signal is divided into 3 parts dynamic circularly display, the three parts are two section, four section and six full display, there into the two section is still displayed. When remote control the super high speed, the fan speed figure blinks quickly; when remote control low fan speed, the figure blinks slowly; When remote control the middle fan it will display speed is between the high speed and low speed; When remote control the auto speed, the figure blinks depends on the inner fan motor actual running speed. If indoor unit stops running that will blink with the lowest speed display.

Note: Export unit with panel 2 haven't this fan speed display.

4．4 Indoor unit malfunction display

Malfunction	Dual 8 display	Running light	Heating light	Cooling light
System abnormal (anti-high temp, unit will stop, cooling overload)	H4		Blink 4 times	
Compressor overload protection	H3		Blink 3 times	
Modes protection	H5		Blink 5 times	
High pressure protection	E1	Blink once		
Anti-freeze protection unit will stop	E2	Blink twice		
Air exhaust tempeature protection	E4	Blink 4 times		
Low voltage overcurrent protection	E5	Blink 5 times		
Modes confliction	E7	Blink 7 times		
Communication malfunction	E6	Blink 6 times		
Defrost or heating oil return	H1		Blink once	
Indoor ambient temp sensor opened, short circuit	F1			Blink once
Any of indoor evaporator sensor opened, short circuit	F2			Blink twice
Outdoor ambient sensor opened, short circuit	F3			Blink 3 times
Outdoor condensor sensor opened, short circuit	F4			Blink 4 times
Outdoor air exhaust sensor opened, short circuit	F5			Blink 5 times
Start up failure	H7		Blink 7 times	
PFC malfunction	HC		Blink 6 times	
Compressor demagnetization protection	HE		Blink 14 times	
The following malfunction need to use remote control for transfer, within 3s continuously press SLEEP button for 6 times will display, 5min will automatically quit detection status (invalid in Auto mode) or within 3s continuously press SLEEP button for 6 times will quit.				
Over current frequency decline	F6			Blink 6 times
Whole unit over current frequncy decline	F8			Blink 8 times
Compressor air exhuast frequncy decline	F9			Blink 9 times
Whole unit AC current voltage decline frequency decline	E0	Blink 10 times		
Heating anti-high temperature frequency decline	H0		Blink 10 times	
Anti-cool wind protection	E9	Blink 9 times		
Cooling oil return	F7			Blink 7 times

Note: If several malfunction exist synchronously, the malfunction code will display circularly. Indicator will blink 0.5s and extinguish 0.5s. Defrosting. oil reutrn procedure, and quit within 3mins, will not detect indoor unit all sensor malfunction.

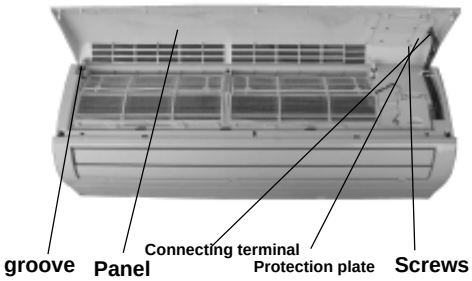
7 Disassembly and Assembly Procedures

7.1 Disassembly Procedures of Indoor Unit for panel 1

Operating Procedures / Photos

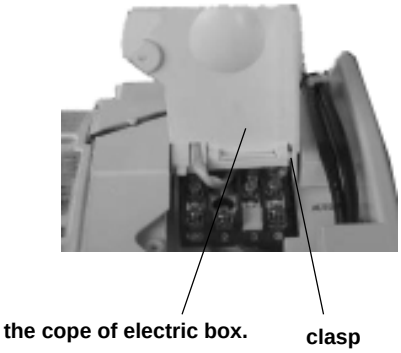
7.1.1 Disassemble Front Panel

Lift the front panel upward. Firstly, screw off a screw fixing the upper protection plate at the receiving window and remove the protection plate. Then, pull away the connection terminal. Pull the panel outward with force along the groove fixing the panel of the panel body to remove the panel



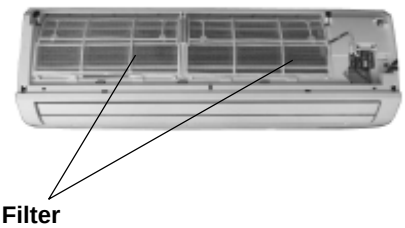
7.1.2 Disassemble Cope of Electric Box

Firstly, screw off the screw fixing the cope of electric box, open the cope of electric box, loose the clasp and remove the cope of electric box.



7.1.3 Disassemble Filter

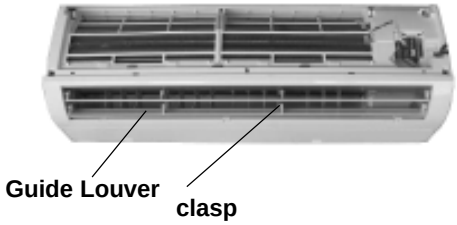
Push the filter inward, and then pull it upward to remove it.



Operating Procedures / Photos

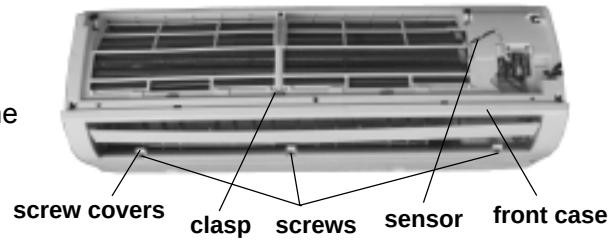
.1.4 Disassemble Lower Guide Louver

Manually bend the lower guide louver to loose the clasp at the guide louver. Remove the lower guide louver.(Note:to remove the upper guide louver,you must open the front case first, then screw off the screws fixing the upper guide louver and the water tray , bend the upper guide louver and remove the upper guide louver)



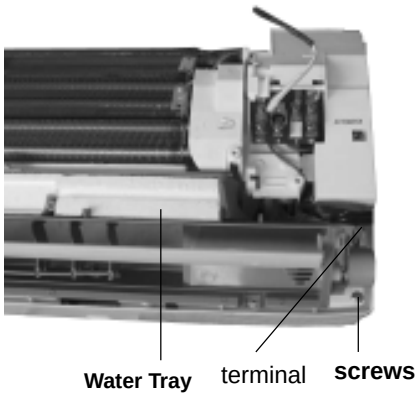
.1.5 Disassemble Front Case

Unscrew the three screw covers at the front case, unscrew the three screws, pull open the clasp at the front case, and remove the front case.



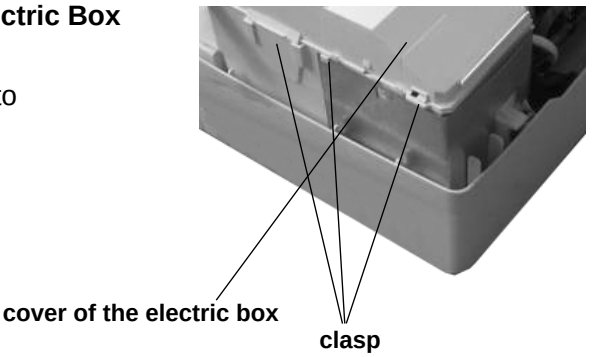
.1.6 Disassemble Water Tray

Screw off the fixing screws fixing the water tray with a screw driver. Loose the clasp at the other end and pull out the terminal board of the step motor. Pull upward the water tray and take it out. Remove the water tray.



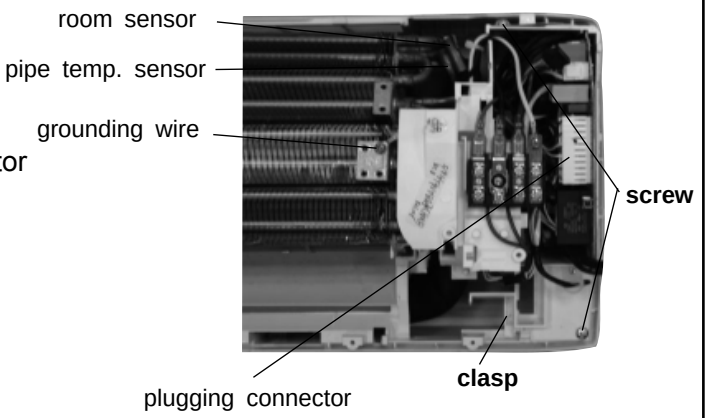
7.1.7 Disassemble Cover of Electric Box

Loosen the three clasps, and pull upward to remove the cover of the electric box.



7.1.8 Disassemble Electric Box

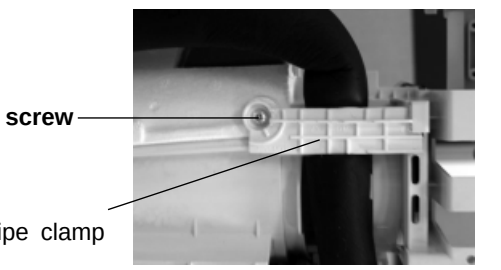
Remove the grounding wire of the evaporator.
Take out the pipe temp. sensor.
Unplug the plugging connector of the indoor motor at the electric box, use screwdriver to unscrew the screw fixing the electric box, loose the clasp and remove the electric box.



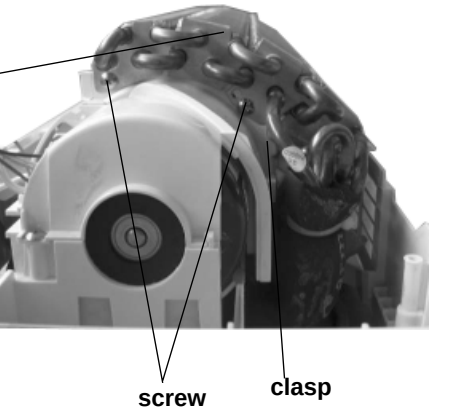
7.1.9 Disassemble Evaporator

Unscrew the screw fixing the rear pipe clamp to

Unscrew the screws fixing the evaporator, one on the left and two on the right. Manually lift the evaporator and release the side clasp of the evaporator from the groove.Carefully take out the evaporator and pay attention to protect the connecting pipe.

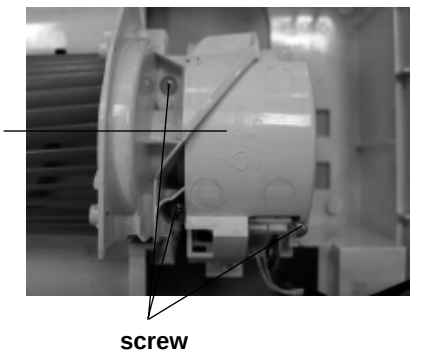


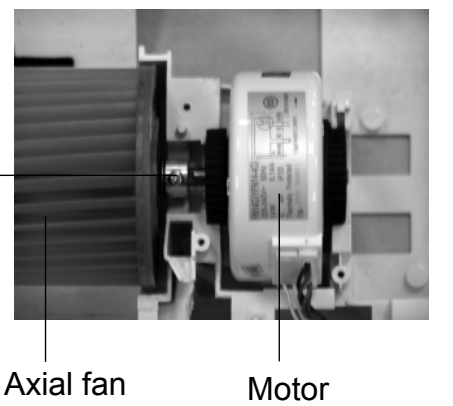
Operating Procedures / Photos



7.1.10 Disassemble Motor

Use screwdriver to unscrew the two screws fixing the motor clamp, and remove the motor clamp. Unscrew the three holding screws at the shaft sleeve, and remove the motor.

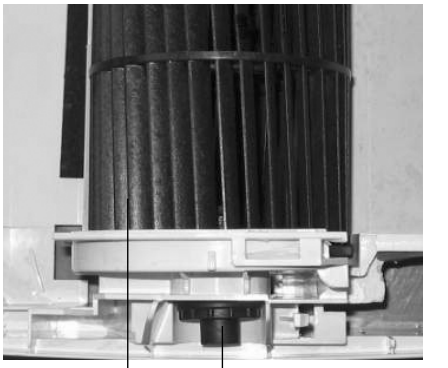




Operating Procedures / Photos

7. 1. 11 Disassemble Cross Flow Fan

After remove the motor, pull out it from the left bearing holder.



Cross Flow Fan

Bearing Holder

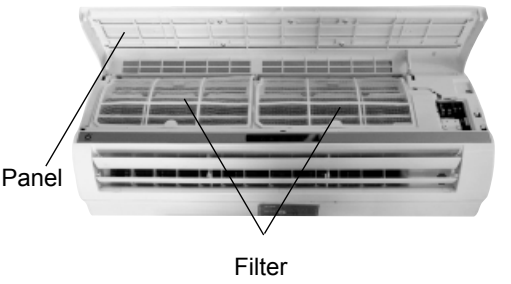
7. 2 Disassembly Procedures of Indoor Unit for panel 2

Operating Procedures / Photos

7. 2. 1 Disassemble front panel and filter

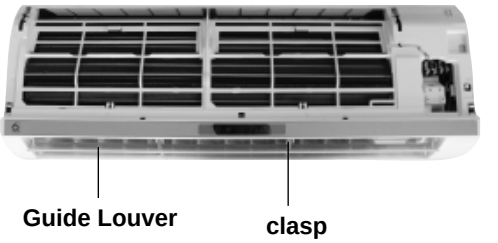
Open the panel,screw off screws fixing the cover of electric box,pull away the electric box.Pull the panel outward with force along the groove fixing the panel of the panel body to remove the panel

Push the filter inward, and then pull it upward to remove it.



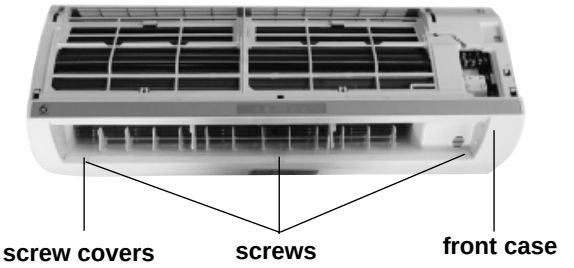
7. 2. 2 Disassemble Lower Guide Louver

Manually bend the lower guide louver to loose the clasp at the guide louver. Remove the lower guide louver.



7. 2. 3 Disassemble Front Case

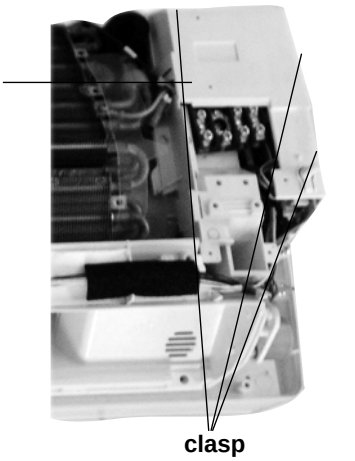
Unscrew the three screw covers at the front case, unscrew the three screws, pull open the clasp at the front case, and remove the front case.



Operating Procedures / Photos

7.2.4 Disassemble Cover of Electric Box

Loosen the three clasps, and pull upward to remove the cover of the electric box.

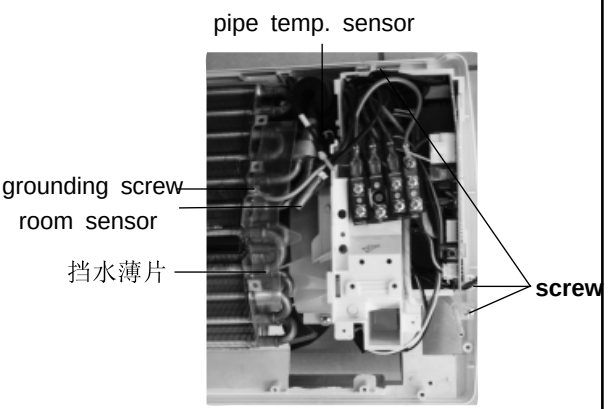


7.2.5 Disassemble Water Tray

Screw off the fixing screws fixing the water tray with a screw driver. Loose the clasp at the other end and pull out the terminal board of the step motor. Pull upward the water tray and take it out. Remove the water tray.

7.2.6 Disassemble Electric Box

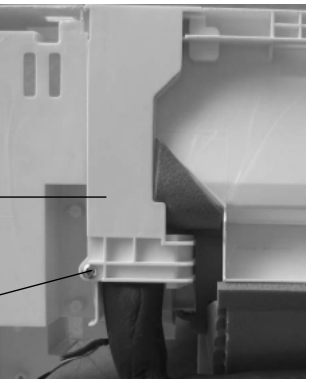
Remove the grounding screws of the evaporator. Take out the indoor temp. and pipe temp. sensors.
卸下挡水薄片。
Unplug the plugging connector of the indoor motor at the electric box, use screwdriver to unscrew the screw fixing the electric box, loose the clasp and remove the electric box.

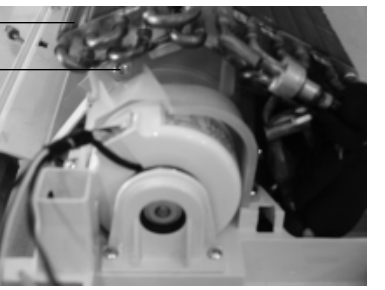


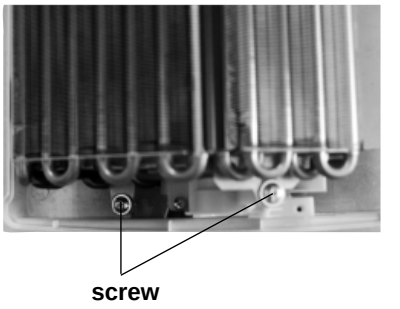
Operating Procedures / Photos

7.2.7 Disassemble Evaporator

Unscrew the screw fixing the rear pipe clamp to remove it.
Unscrew the screws fixing the evaporator, one on the left and two on the right. Manually lift the evaporator and release the side clasp of the evaporator from the groove.Carefully take out the evaporator and pay attention to protect the connecting pipe.

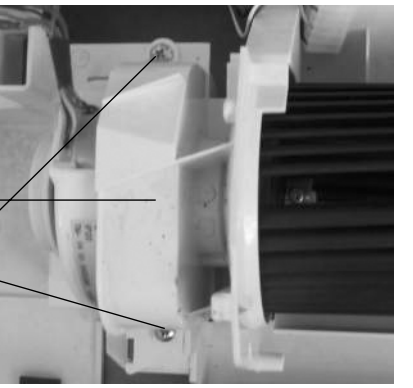


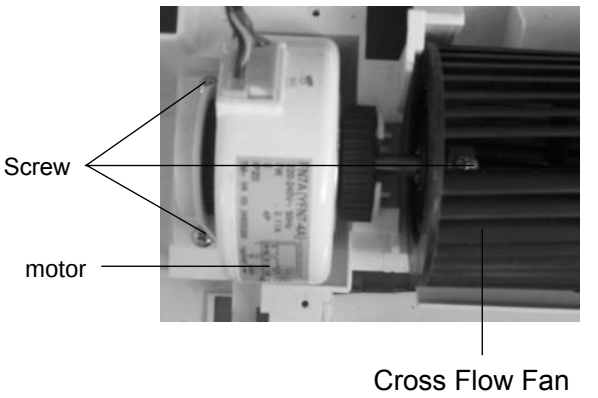




7.2.8 Disassemble Motor

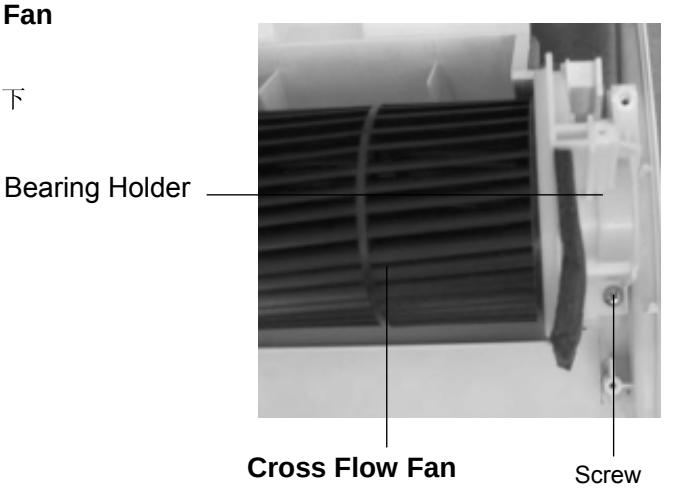
Use screwdriver to unscrew the two screws fixing the motor clamp, and remove the motor clamp. Unscrew the three holding screws at the shaft sleeve, and remove the motor.





7.2.9 Disassemble Cross Flow Fan

用螺丝刀拧开固定轴承胶座的一个螺钉，卸下轴承胶座后，即可取下轴流风叶。



PARTS GUIDE

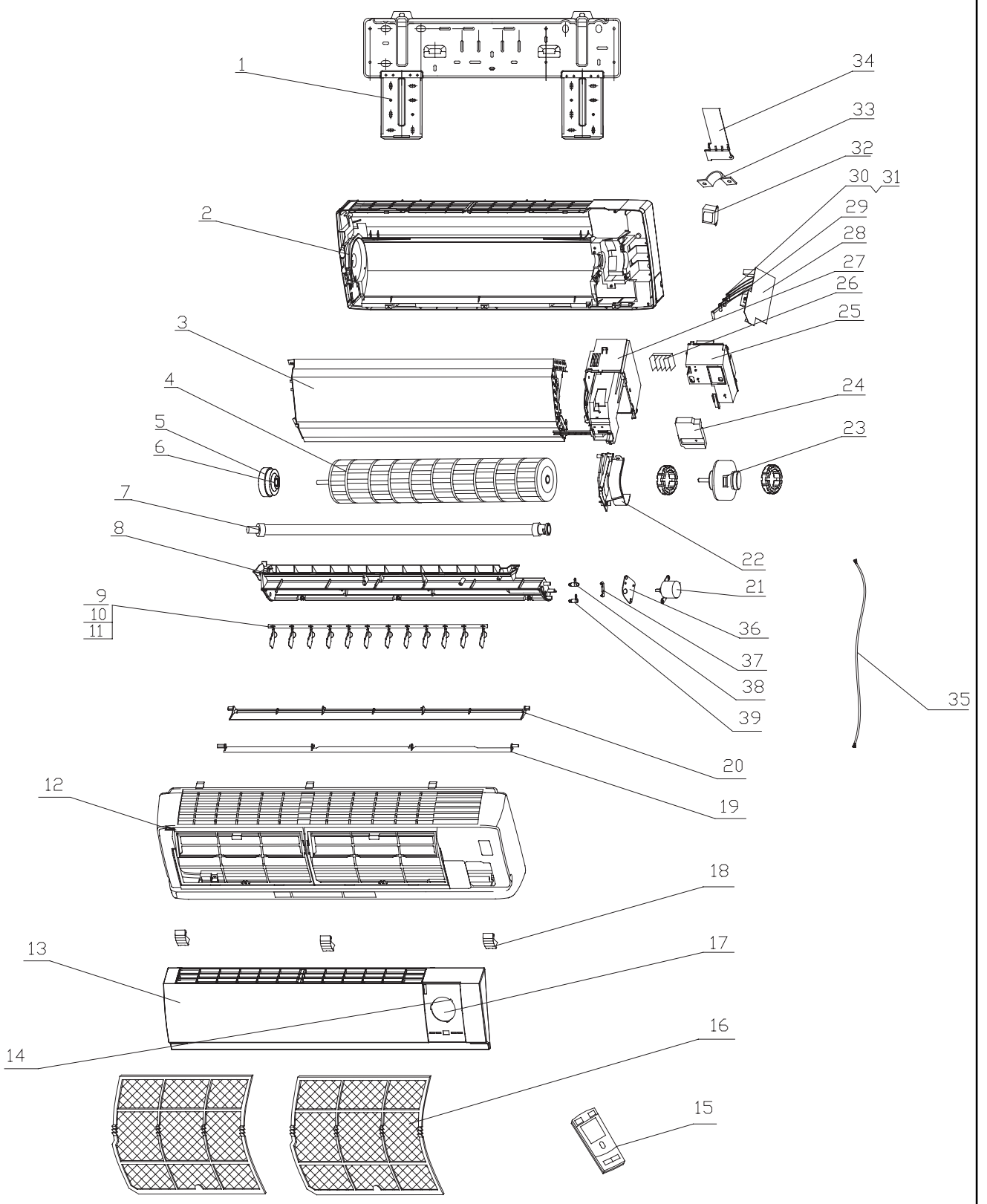
FREE COMBI SERIE

FC-H07AIN, FC-H09AIN, FC-H12AIN

sinclair
AIR CONDITIONING

8 Exploded View and Components and Parts List

Exploded View of Components and Parts of Indoor Unit

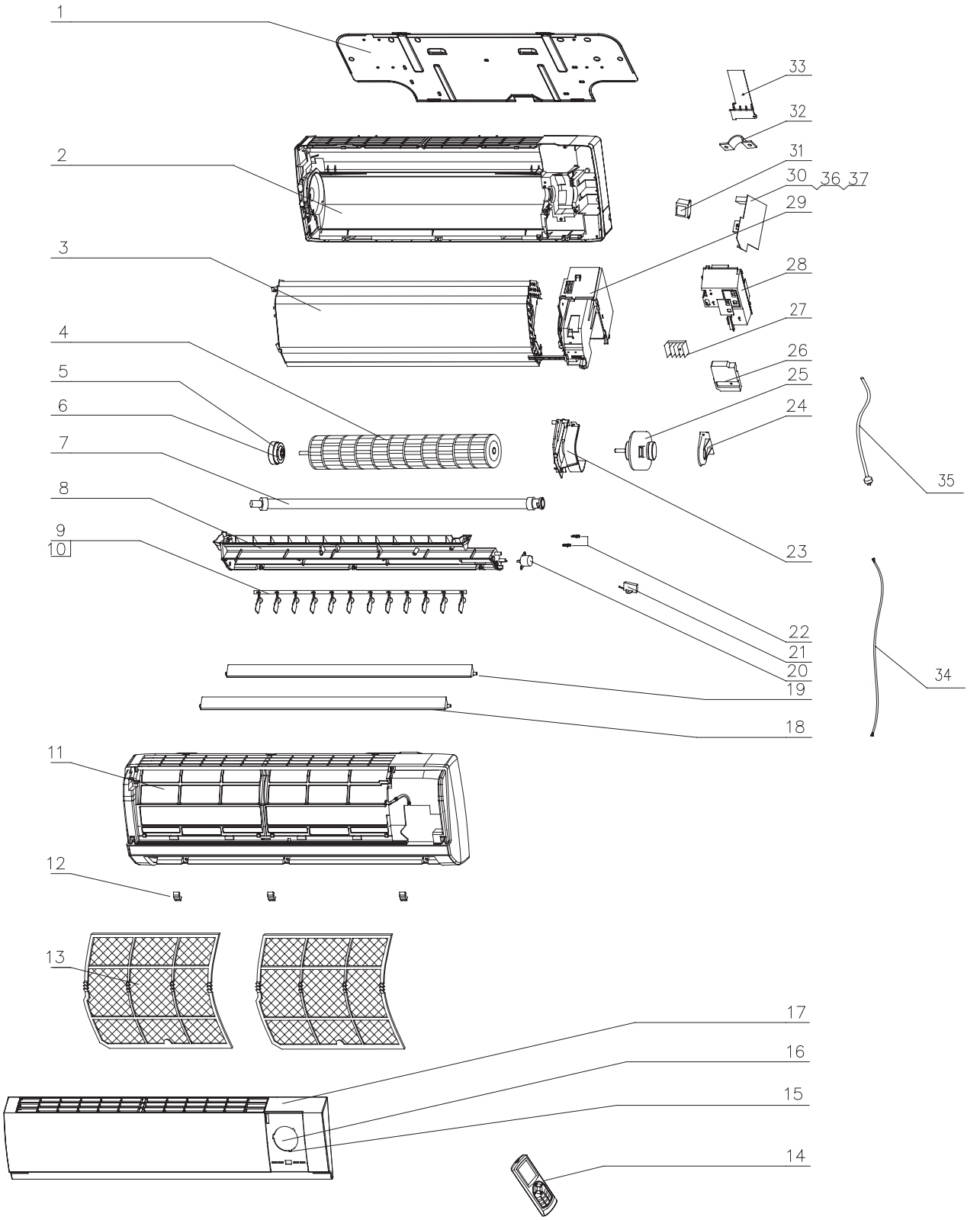


Components and Parts List of Indoor Unit

No	Description	Part Code		Qty
		FC-H07AIN	FC-H09AIN	
1	Wall-Mounting Frame	01252220	01252220	1
2	Rear Case	222020012	222020012	1
3	Evaporator Assy	010020531	010020531	1
4	Cross Flow Fan	10352001	10352001	1
5	Ring of Bearing	76512203	76512203	1
6	/	/	/	/
7	Drainage Pipe	0523001401	0523001401	1
8	Water Tray	201820271	201820271	1
9	Swing Louver	10512032	10512032	12
10	Swing Linkage 1	10582002	10582002	1
11	Swing Linkage 2	10582003	10582003	1
12	Front Case	20002215	20002215	1
13	Front Panel	200023353	200023353	1
14	Decorate piece	68012019	68012019	1
15	Remote control YT1F	30510049	30510049	1
16	Filter	111200511	111200511	2
17	Receiver Board D5K3	30545041	30545041	1
18	Screw Cover	24252006	24252006	3
19	Guide Louver 1	10512033	10512033	1
20	Guide Louver 2	10512034	10512034	1
21	Motor MP28VB	15012086	15012086	1
22	Motor Clamp	26112014	26112014	1
23	Motor FN20E-PG	150120761	150120761	1
24	Electric box cover	20122082	20122082	1
25	Covering plate	20112058	20112058	1
26	Terminal board T4B3A	42011233	42011233	1
27	Electric box	20112057	20112057	1
28	Main PCB M803F2AJ	30038004	30038004	1
29	Room Sensor15K	390000451	390000451	1
30	Tube Sensor 20K	3900019814	3900019814	1
		3900019815	3900019815	1
		3900019816	3900019816	1
31	Jumping Connector	4202300101	4202300102	1
32	Transformer 48X26J	43110261	43110261	1
33	Wire clamp	71010253	71010253	1
34	Rear clamp	24242001	24242001	1
35	Connecting Cable	400204056	400204056	1
36	swing louver clamp	10582409	10582409	1
37	swing louver	10582408	10582408	1
38	swing louver(up)	10542004	10542004	1
39	swing louver(down)	10542005	10542005	1

The above data is subject to change without prior notice.

Exploded View of Components and Parts of Indoor Unit



Components and Parts List of Indoor Unit

No	Description	Part Code	Qty
		FC-H12AIN	
1	Wall-Mounting Frame	01252384	1
2	Rear Case	22202050	1
3	Evaporator Assy	01002250	1
4	Cross Flow Fan	10352005	1
5	Ring of Bearing	76712015	1
6	\	\	\
7	Drainage Pipe	0523001401	1
8	Water Tray	201820393	1
9	Swing Louver	10512041	12
10	Swing Linkage	105824397	1
11	Front Case	200022957	1
12	Screw Cover	24252007	3
13	Filter	11122440	2
14	Remote Control YT1F	30510049	1
15	Decorate Piece	68012019	1
16	Receiver Board	30545042	1
17	Front Panel	20002292	1
18	Guide Louver	26112043	1
19	Guide Louver	26112042	1
20	Motor MP28EC	15212002	1
21	\	\	\
22	\	\	\
23	Right Motor Clamp	261124292	1
24	Bearing Holder	26152423	1
25	Motor FN20J-PG	150120752	1
26	Electric Box Cover	20122081	1
27	Terminal Board T4B3A	42011233	1
28	Covering Plate	20112060	1
29	Electric Box	20112059	1
30	Main PCB M803F2J	30038003	1
31	Transformer 48X26J	43110261	1
32	Wire Clamp	71010003	1
33	Rear Clamp	26112430	1
34	Connecting Cable	400204056	1
35	\	\	\
36	Room Sensor 15K	390000451	1
37	Tube Sensor 20K	3900019814	1
		3900019815	1
		3900019816	1

The above data is subject to change without prior notice.